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A.D. 1887, 17*th* October. N° 14,062.

PROVISIONAL SPECIFICATION.

Improvements in Automatic Medical Electrical Apparatus.

I, Edgar Pullar of No. 11 Queen Victoria Street, London, E.C. Engineer, do hereby declare the nature of this invention to be as follows :—

This invention relates to the production of automatic apparatus for the application of electrical currents to one or more persons for the purpose of restoring diminished nerve power, and for the electrical treatment of disease generally, and has also for its object the conservation of the energy of the battery when not in use.

In accordance with my invention I provide an ordinary galvanic battery of any suitable kind, in conjunction with with a coil or helix of wire, which may be either a primary wire for administering a direct intermittent primary current, or a secondary wire may be wound upon the primary coil, in order to utilise an induced current of higher potential.

The battery and coil with an automatic "make and break" contact of ordinary form may be enclosed in a case of any suitable shape and design.

In order to prevent the wasting of the energy of the battery by the maintenance of a closed circuit when a current is not required, and further to obviate the liability to probable damage to, and consequent exhaustion of the battery by meddlesome people, I arrange a slide of brass or other suitable metal terminating in a knob or handle forming one of the conducting poles of the improved apparatus. The handle aforesaid upon being drawn out is arranged to vary the strength of the current according to the degree to which said handle is drawn out, the current strength being determined by a graduated scale marked upon the slider above mentioned. Said slider, which is so arranged as to slide freely within suitable horizontal guides, is kept in its normal position by the tension of a spring, and may be made to operate either by pushing or by pulling against the tense spring, according to the requirements of the particular type of apparatus.

A contact block, spring, brush or equivalent makes contact with the slider, and completes the primary electrical circuit when the handle is slightly drawn forwards, or pressed inwards as the case may be. At the end of the slider is attached the magnetic core of the coil, so that the power of said coil, whether used as a primary or induction coil, may be regulated by the proportion of the core inserted within, or withdrawn from the helices

[*Price* 8*d*.]

Upon, or in combination with the slider, above referred to, is pivotted or hinged a pawl, catch or equivalent device which locks said slider in its normal position between the guides, and, by means of a key or equivalent device, the pawl may be removed from its locking position, thus enabling the slider to be drawn out, or pushed in, as the case may be, and the apparatus brought into action. This arrangement according to my invention, limits the use of the machine to the persons who possess the key, and any irregular tampering with the apparatus is thereby avoided. As an alternative method to the foregoing, of unlocking the mechanism, I may counterbalance the pawl above mentioned, and arrange a shoot or channel way in such a manner that the dropping therein of a coin of predetermined size and weight, will release said pawl, which latter returns to its locking position by gravity, or by the pressure of a spring or equivalent means, when the slider is in its normal position, and the apparatus is out of action.

The sliding handle forming, as above mentioned, one pole or electrode of the battery, the other pole or electrode is formed by a fixed knob or handle, which is electrically connected within the case.

Dated this 17th day of October 1887.

JAMES STEVENSON,
Gray's Inn Chambers,
20, High Holborn, W.C.,
Agent for Applicant.

COMPLETE SPECIFICATION.

Improvements in Automatic Medical Electrical Apparatus.

I, Edgar Pullar of No. 11 Queen Victoria Street London E.C. Engineer do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to the production of apparatus for the automatic application of electrical currents to one or more persons for the purpose of restoring diminished nerve power, and for the electrical treatment of disease generally, and has also for its object the conservation of the energy of the battery when not in use.

In order that my invention may be the better understood I have appended the accompanying sheet of drawings in which Figure 1 is a side elevation and Figure 2 an end elevation of the improved apparatus according to my invention exposing to view the internal arrangement of the mechanism and Figure 3 illustrates a portion of a box or case provided with a lever pull.

In carrying out my invention I provide one or more cells B of an ordinary galvanic battery of any suitable type in conjunction with a coil or helix of wire C, which may be either a primary wire for administering a direct intermittent primary current, or, a secondary coil may be wound upon the primary coil, in order to utilize an induced current of higher potential. The battery B and coil C with an automatic make and break contact D of any ordinary type may be enclosed in a case A of suitable shape and design.

In order to prevent the wasting of the energy of the battery by maintenance of a closed circuit when a current is not required, and further to obviate the liability to probable damage to, and consequent exhaustion of the battery by meddlesome people, I arrange a slider E preferably rectangular in section of brass or other suitable conducting material terminating in a knob or handle *e* to serve as one of the conducting poles of the improved apparatus. The handle *e* and slider E aforesaid upon being drawn out, are arranged to vary the strength of the current according to the degree to which said handle *e* and slider E, are drawn out, the current strength being determined by a graduated scale *d* marked upon one of the surfaces of the rectangular slider E above described. Said slider E, which is arranged to slide freely within horizontal guides is kept in its normal position by the tension of a spring *a* and may be made to operate either by pushing in or by pulling out against the tense spring according to the particular type of apparatus adopted.

A contact block, spring, brush or equivalent F makes contact with the slider E by by means of the arm or pin, *b*, and completes the primary electrical circuit when the handle *e* is slightly drawn forwards or pressed inwards as the case may be.

At the end of the slider E is attached the magnetic core of the coil, so that the power of said coil, whether used as a primary or induction coil, may be regulated by the proportion of the core inserted within or withdrawn from the helices.

Upon, or in combination with the slider E above referred to, is pivoted or hinged a pawl, catch or equivalent G, which locks said slider E in its normal position between the guides, and by means of a key or equivalent device the pawl may be removed from its locking position, thus enabling the slider to be drawn out, or pushed in as the case may be and the apparatus brought into action. This arrangement according to my invention limits the use of the machine to those in possession of the key, and any irregular tampering with the apparatus is thereby avoided. As an alternative method to the foregoing of unlocking the mechanism I may counterbalance the pawl G by attaching thereto a flap or shield *c*. Said flap or shield *c* which may however form part of the pawl G is devised for the purpose of closing or partially closing a shoot or channel H arranged in such a manner that upon the dropping therein through a slot *k* in the lid or cover of the case or box A a coin of predetermined size and weight, said coin falls upon and bears down the flap or shield *c* sufficiently to allow of the pawl G disengaging with the catch *f* upon the slider E thus allowing of the withdrawal from or pressing in of said slider E. In the act of withdrawing the slider E, the catch *f* bears upon the curved part of pawl G raising it to a greater extent, by which the coin is released and falls into a receptacle provided for the purpose in the bottom of the box. Instead of employing a slider E as above described for closing the electrical circuit I may substitute therefor as an alternative a pivoted lever I Figures 3 and 6 having at its pivoted end a cranked extension or branch arm J perforated at its extremity with an elongated slot *j*. Said cranked extension J engages with the forked end of the magnetic regulating core *i*, the arc described by the crank J upon the pulling forward of the lever I being compensated for by means of the elongated slot *j*.

The mode of operating the apparatus, and the course followed by the current is as follows :—The slider E having been unlocked either by a key or by the insertion of a coin in the shoot H raising the pawl G, the handle *e* (Figure 1 and 4) or lever I (Figure 4) is gently pulled forward, in which action the primary circuit is closed at the moment of contact being made between the pin *b* and spring F, the current flowing from say the zinc terminal Z to the coil of the make and break contact D, thence by way of the pillar *x* to spring or brush F, arm or pin *b* through the primary wire of the helix C to the other side c^1 of the battery. One wire of the secondary coil of the helix is connected to the slider E the induced current flowing thence by way of the handle D^1 through the body of the person holding to the other wire of the secondary coil of the helix thus completing the secondary circuit.

Having now particularly described and ascertained the nature of my said Invention, and in what manner the same is to be performed, I declare that what I claim is :

First :—The improved medical electrical apparatus substantially as herein described and illustrated in the accompanying drawings.

Second :—In an apparatus for the administration of a current of electricity to the human frame the employment of a slider E or lever I attached to the magnetic core provided with a contact arm or pin *b* in combination with an induction coil C, make and break contact D and contact spring or brush F substantially as herein set forth and shown.

Third :—In the improved electrical apparatus herein described the mode of and means employed for unlocking the mechanical arrangement substantially as herein set forth and shown.

Dated this Seventeenth day of February 1888.

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Fig: 1.

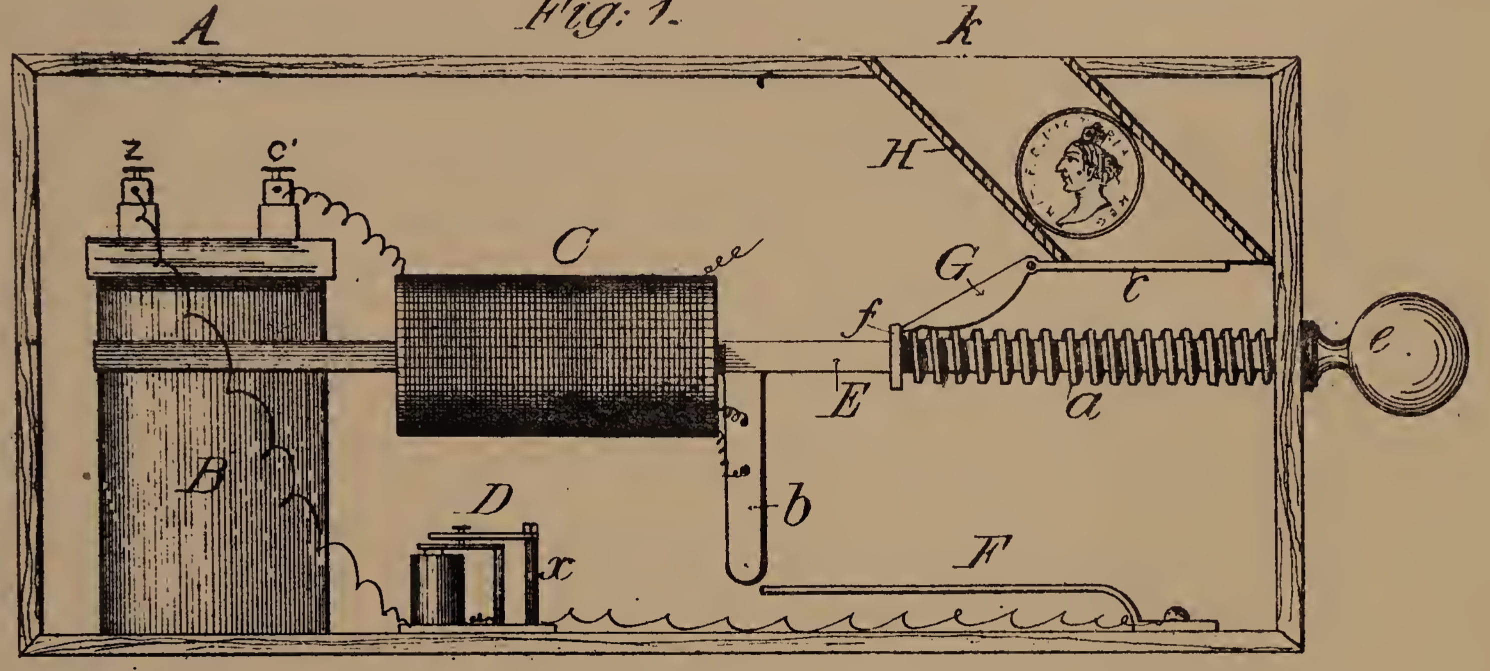


Fig: 2.

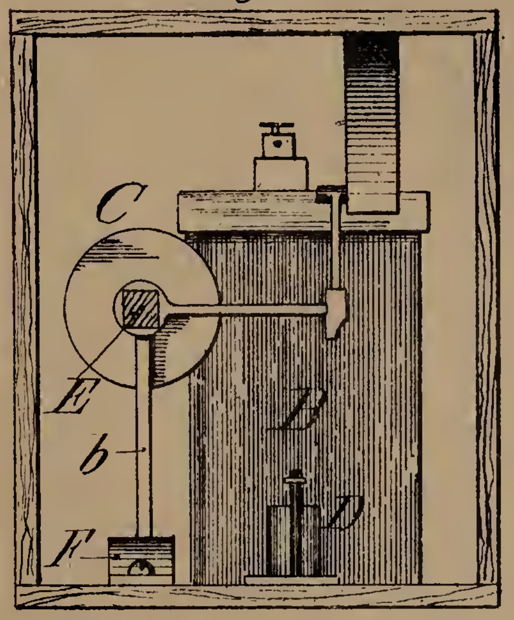


Fig: 3.

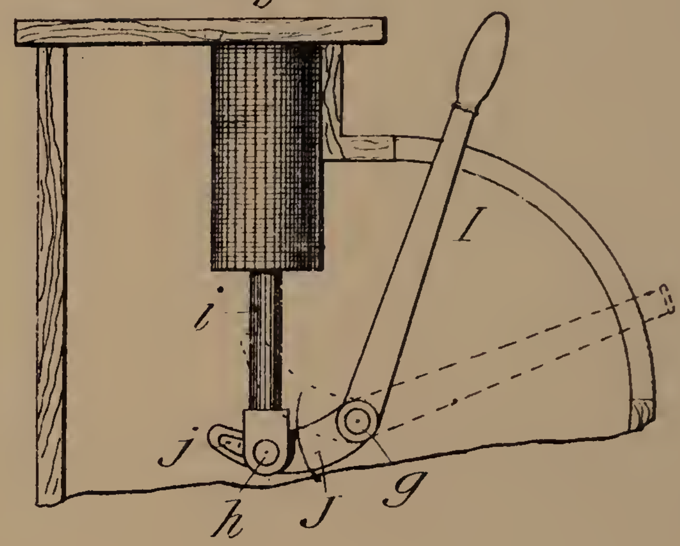


Fig 4.

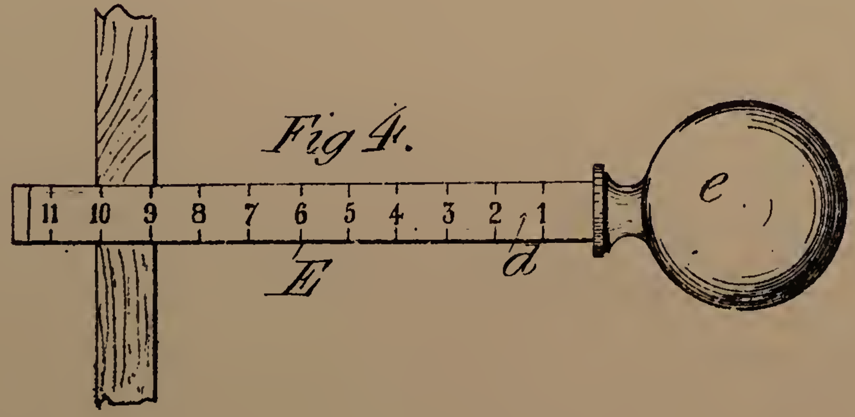


Fig: 5.

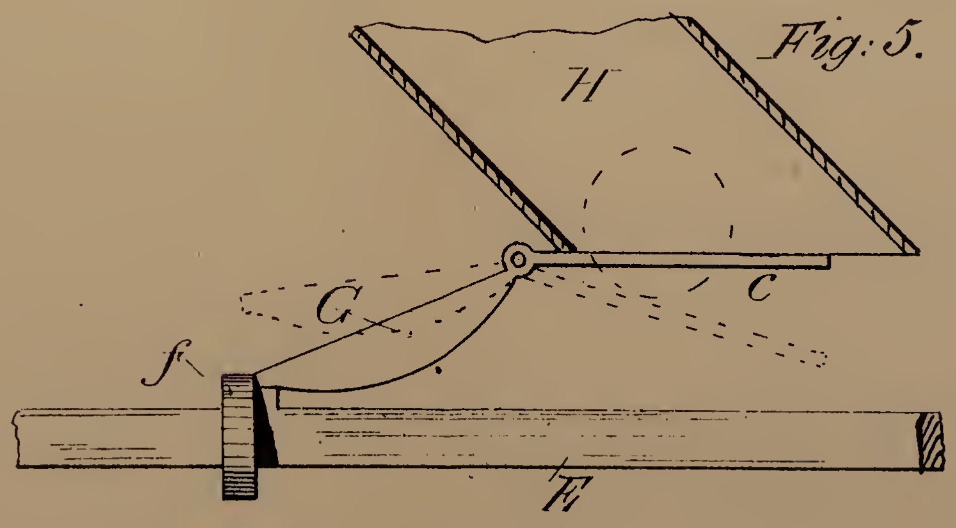
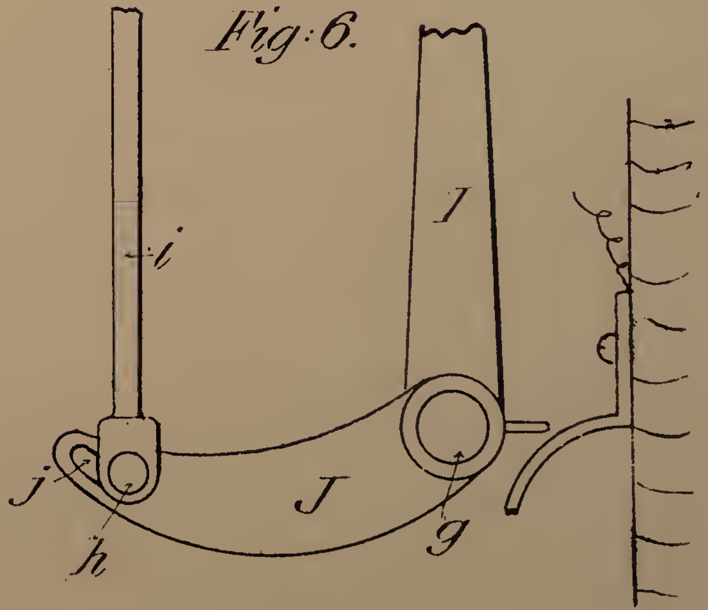


Fig: 6.



[This Drawing is a reproduction of the Original on a reduced scale]

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